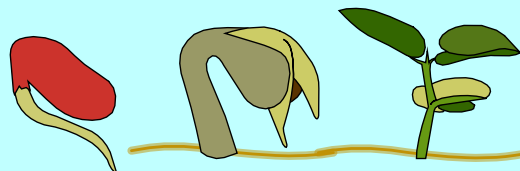


Why do an organism's cells divide?

Feb 16-2:50 PM

To grow.

To repair tissue.



Reproduction.

Feb 16-2:50 PM

Cell Division

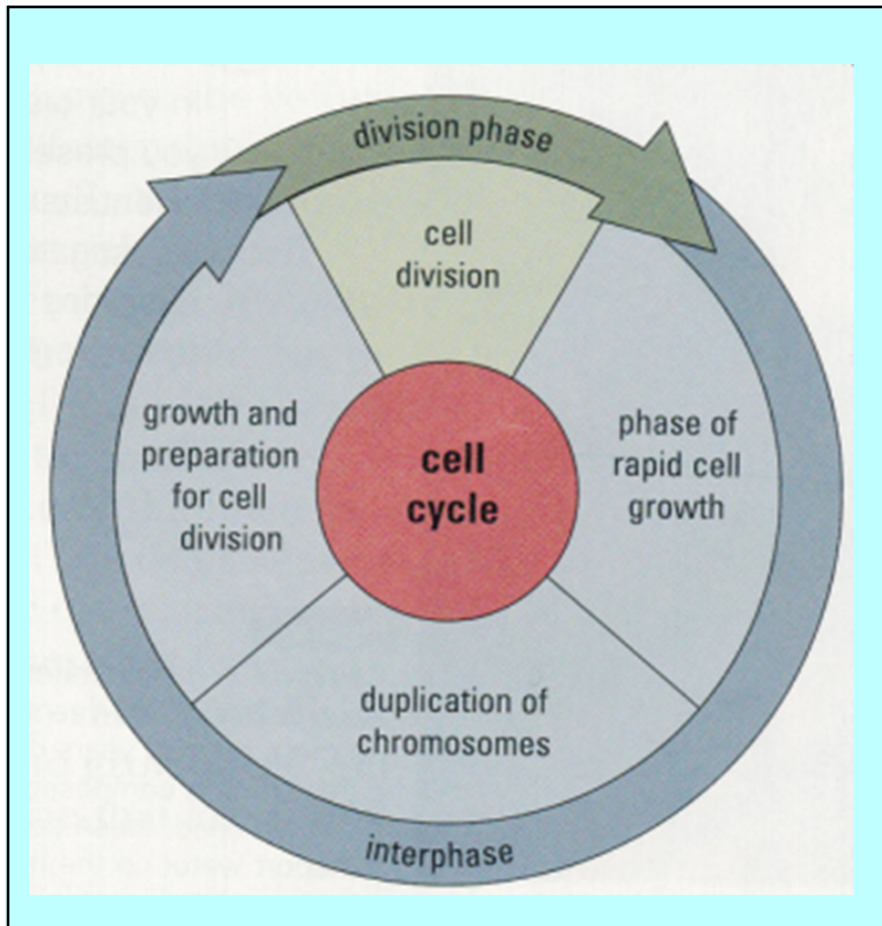
All cells come from preexisting cells through cell division therefore cell division is how life is continued.

Dec 9-9:25 PM

The Cell Cycle

- Cells alternate between phases of dividing and not dividing.
-
- The sequence of events from one division to another is called the **cell cycle**.
-
- The dividing phases are called **mitosis**, while the non dividing phases are called **interphase**.

Dec 9-9:28 PM

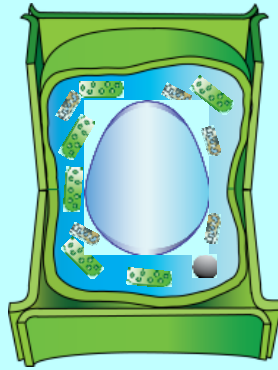


Dec 9-9:34 PM

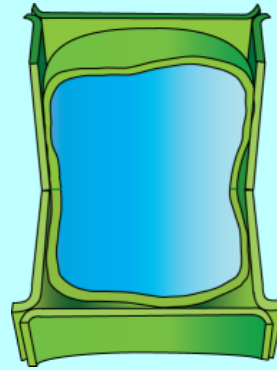
**WHY
DO
CELLS
PERFORM
MITOSIS?**

Dec 9-9:37 PM

Eukaryotes need their organelles to function.



Working cell



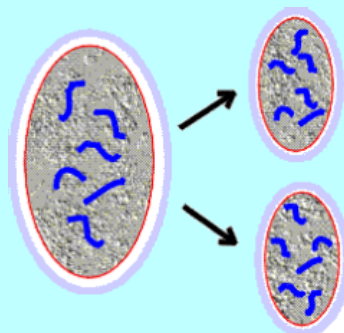
Won't work

Feb 16-2:58 PM

They also need the information in their nucleus



In their chromosomes



Feb 16-4:00 PM

Mitosis and Cytokinesis

Cell division involves the division of nuclear material and the sharing of the cytoplasm and its contents.

Mitosis - process of dividing nuclear materials.

Cytokinesis - process used to separate the cytoplasm and its contents into equal parts.

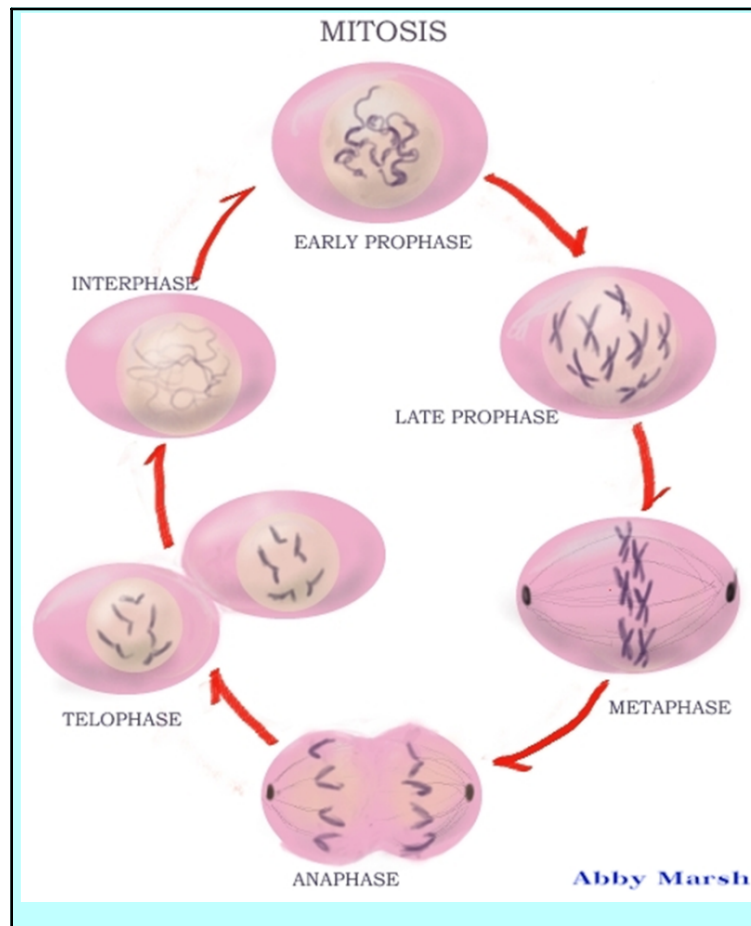
Feb 20-10:56 AM

Mitosis

Consists of four stages:

- 1) Prophase
- 2) Metaphase
- 3) Anaphase
- 4) Telophase

Dec 9-9:46 PM



Dec 9-9:59 PM

Prophase

- The individual chromosomes composed of two identical strands shorten and thicken. The strands become visible when viewed with a light microscope.
- The nuclear membrane begins to fade, dissolve.

Dec 9-9:51 PM

Metaphase

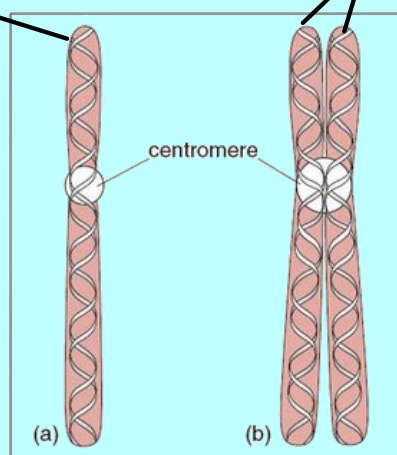
- The double-stranded chromosomes line up in the middle of the cell

Dec 9-9:51 PM

Chromosomes

Chromatid

Sister chromatids



Feb 16-4:26 PM

Anaphase

- Each chromosome splits and the two halves move to opposite poles of the cell.
- If anaphase occurred correctly each daughter cell will have a complete set of genetic information.

Dec 9-9:51 PM

Telophase

- The chromosomes reach the opposite poles of the cell and the nuclear membrane begins to form around each set.
- Cytokinesis begins

Dec 9-9:51 PM

Cytokinesis

- Cell division continues with the **separation of the cytoplasm and its contents** into equal parts. This process is called **cytokinesis**
- This process begins before mitosis is complete.
- About half of the cytoplasm, containing about half of the organelles, goes to each daughter cell. Remember, an organelle is a specialized structure inside the cell.

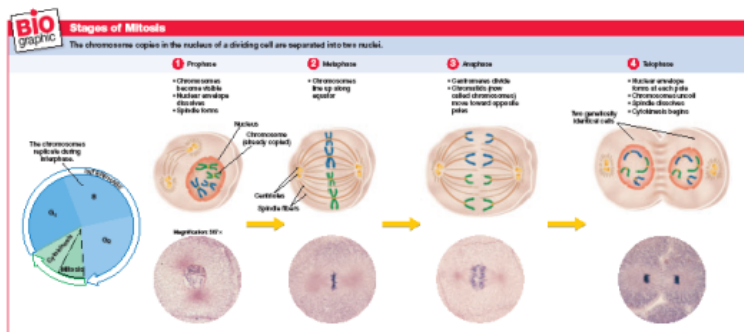
Dec 9-9:58 PM

Cell Biology

TEACHING TRANSPARENCY

Stages of Mitosis

B47



Feb 18-7:51 AM

Click the button to show mitosis video

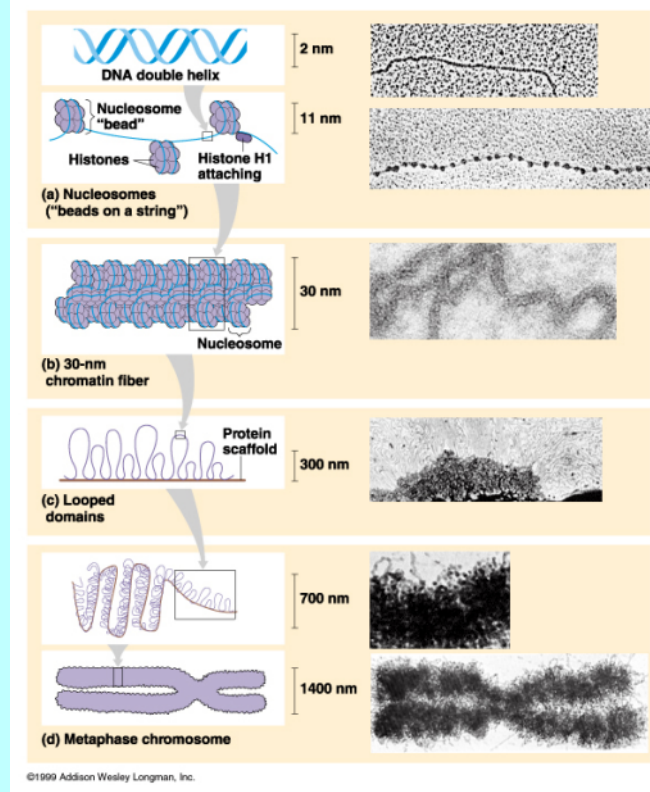


Feb 20-4:04 PM

- http://www.biology.arizona.edu/cell_bio/tutorials/cell_cycle/cells3.html
- http://www.biology.arizona.edu/cell_bio/tutorials/cell_cycle/mitosis_movie.html

Dec 9-10:03 PM

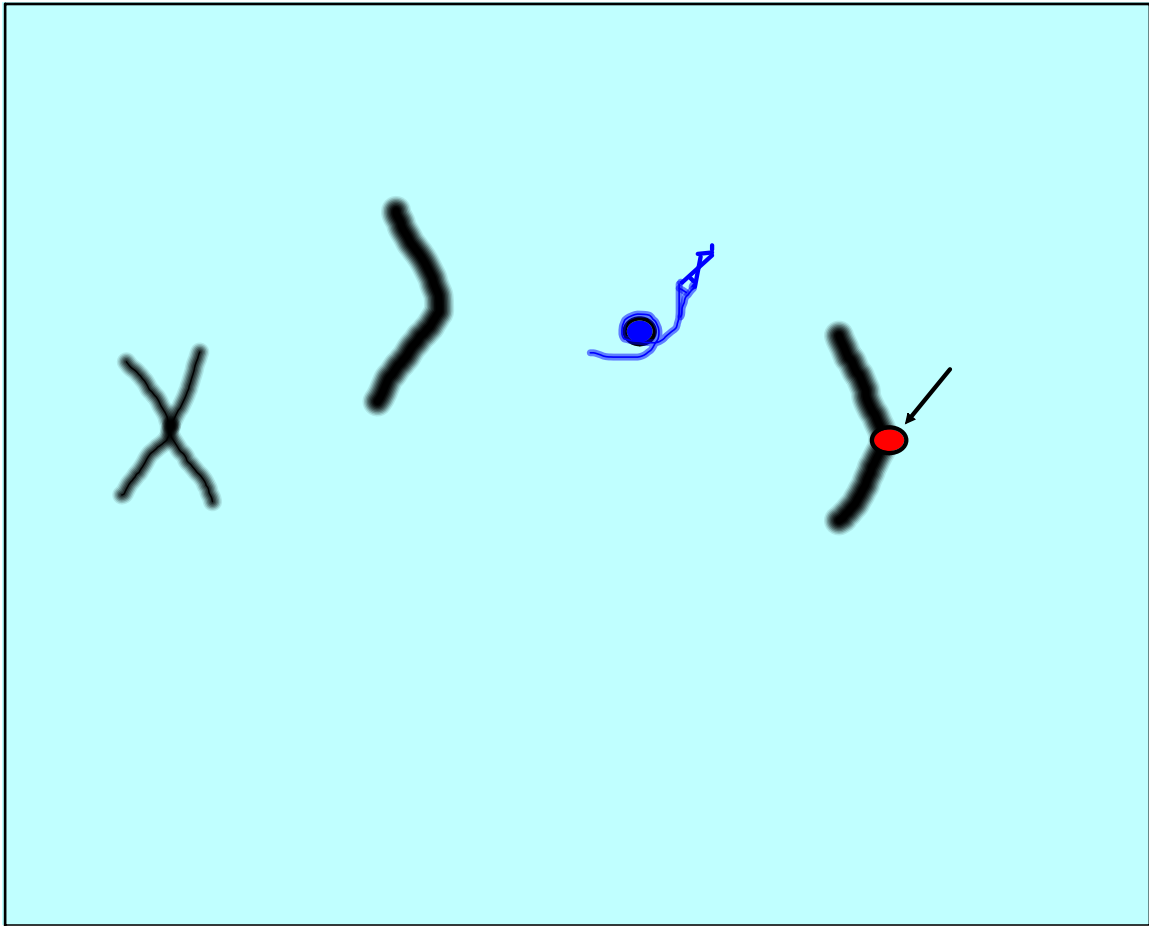
Chromosomes come well packed.



Feb 16-4:09 PM

Test your
knowledge of the
basic parts by
dragging the term
to the correct
image.

Feb 16-6:18 PM



Feb 16-5:53 PM



Press the blue button to link
to the Onion Root Mitosis
Simulation

Feb 18-8:05 AM



Feb 20-12:44 PM

Reproduction and Cell Division

- Organisms from all species reproduce either sexually or asexually
- In asexual reproduction a single organism gives rise to offspring with identical genetic information (e.g. bacteria)
- In sexual reproduction genetic information from two cells is combined to produce a new organism. Usually involves the union of an egg and a sperm (specialized sex cells)

Feb 20-1:21 PM

Types of Asexual Reproduction

- There are five basic types of asexual reproduction.
 - **Binary fission** involves the organism splitting into two equal size offspring (e.g. bacteria)
 - **Budding involves** offspring beginning as a small outgrowth from the parent that eventually breaks off and forms a new organisms (e.g. hydra)
 - **Fragmentation** involves the formation of a new organism from a part that is broken off from the parent organism (e.g. starfish)

Dec 9-10:12 PM

- **Spore formation** involves the organism undergoing frequent cell division to produce many smaller identical cells called spores (e.g. penicillium mould)
- **Vegetative reproduction** involves the production of runners that will develop into another plant (e.g. spider plants, strawberries)

Dec 9-10:16 PM

Hormones for Cell Growth and Division

- Both plants and animals produce a number of hormones that aid in cell growth and division.
- In plants one common growth hormone is **Cytokinins** (stimulate cell division)
- In animals one common growth hormone is **Growth hormone** (GH), which causes rapid cell division

Dec 9-10:16 PM

Dec 9-10:18 PM